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(21) International Application Number: PCT/US92/07815 (22) International Filing Date: 16 September 1992 (16.09.92) (30) Priority data: 762,522 18 September 1991 (18.09.91) US (60) Parent Application or Grant (63) Related by Continuation US 07/762,522 (CIP) Filed on 18 September 1991 (18.09.91) (71) Applicant (for all designated States except US): AFFYMAX TECHNOLOGIES N.V. [NL/NL]; De Ruyderkade 62, Curaco (NL).	(72) Inventors; and (75) Inventors/Applicants (for US only): DOWER, William, J. [US/US]; 761 Partridge Avenue, Menlo Park, CA 94025 (US). BARRETT, Ronald, W. [US/US]; 562 Carlisle Way, Sunnyvale, CA 94087 (US). GALLOP, Mark, A. [NZ/US]; 1735 Woodland Avenue, #9, East Palo Alto, CA 94303 (US). (74) Agents: SMITH, William, M. et al.; Townsend and Town- send, One Market Plaza, 20th Floor, Steuart Tower, San Francisco, CA 94105 (US). (81) Designated States: AU, CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE). Published <i>With international search report.</i>	
(54) Title: METHOD OF SYNTHESIZING DIVERSE COLLECTIONS OF OLIGOMERS (57) Abstract A general stochastic method for synthesizing random oligomers can be used to synthesize compounds to screen for desired properties. The use of identification tags on the oligomers facilitates identification of oligomers with desired properties.		

METHOD OF SYNTHESIZING DIVERSE COLLECTIONS OF OLIGOMERS

FIELD OF THE INVENTION

The present invention relates generally to stochastic methods for synthesizing random oligomers, with particular emphasis on particle-based synthesis methods. The invention also relates to the use of identification tags on the particles to facilitate identification of the oligomer sequence synthesized. Yet another aspect of the invention relates to the use of tagged oligomer libraries in receptor-binding studies.

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BACKGROUND OF THE INVENTION

The relationship between structure and activity of molecules is a fundamental issue in the study of biological systems. Structure-activity relationships are important in understanding, for example, the function of enzymes, the ways in which cells communicate with each other, and cellular control and feedback systems. Certain macromolecules are known to interact and bind to other molecules having a very specific three-dimensional spatial and electronic distribution. Any large molecule having such specificity can be considered a receptor, whether the molecule is an enzyme catalyzing hydrolysis of a metabolic intermediate, a cell-surface protein mediating membrane transport of ions, a glycoprotein serving to identify a particular cell to its neighbors, an IgG-class antibody circulating in the plasma, an oligonucleotide sequence of DNA in the genome, or the like. The various molecules that receptors selectively bind are known as ligands.

Many assays are available for measuring the binding affinity of known receptors and ligands, but the information that can be gained from such experiments is often limited by the number and type of available ligands. Novel ligands are sometimes discovered by chance or by application of new techniques for the elucidation of molecular structure, including x-ray crystallographic analysis and recombinant genetic techniques for proteins.

Small peptides are an exemplary system for exploring the relationship between structure and function in biology. A peptide is a polymer composed of amino acid monomers. When the twenty naturally occurring amino acids are condensed into polymeric molecules, the resulting polymers form a wide variety of three-dimensional configurations, each resulting from a particular amino acid sequence and solvent condition. The number of possible pentapeptides of the 20